SAN FRANCISQUITO CREEK
SANTA CLARA AND SAN MATEO COUNTIES, CALIFORNIA

INFORMATION CALLED FOR BY
SENATE RESOLUTION 148, 85TH CONGRESS
ADOPTED 28 JANUARY 1958

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1. PROJECT DESCRIPTION AND ECONOMIC LIFE

The proposed reservoir project for flood control and allied purposes would be located on San Francisquito Creek, about four miles southwest of Palo Alto, California. The project would consist of a reservoir of 12,600 acre-feet of gross storage with 8,500 acre-feet allocated for flood control, 3,500 acre-feet for water conservation and 600 acre-feet reserved for siltation. The dam would be a rolled-earthfill structure with a height of 100 feet above the streambed and a crest length of 2,200 feet. The spillway would be located in the left abutment of the earth dam. It would have a concrete ogee weir 220 feet long with a concrete conduit nine feet square constructed through the ogee weir to provide for flood control releases. The outlet works would be located near the left abutment and be comprised of an intake structure incorporating two emergency slide gates, a 660-foot long pressure conduit and downstream control system having a maximum capacity of approximately 500 cubic feet per second. The conduit would be used, principally, for making releases for water conservation.

A 50-year economic project life was used in the report as the basis for economic analysis. Items such as gates and machinery were considered to have a 30-year life and would require replacement during the life of the project.

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2. PROJECT COST

The estimates in this supplement, as in the report, were prepared on the basis of unit costs prevailing in November 1959. All estimates include allowances for contingencies, engineering and supervision and administration. The estimated first cost and average annual charges including interest and amortization at a Federal rate of 2-5/8 percent and a non-Federal rate of 4 percent, maintenance, operation and replacements are summarized as follows:

SUMMARY OF CHARGES

		Annual Charges			
Project Life in Years	Total 1st Cost	Interest & Amortization	Maintenance & Operation	Replacement	Total
50	$ 7,754,000	$ 354,000	$ 19,000	$ 4,000	$ 377,000
100	8,200,000	321,000	20,000	5,000	346,000

The increase in first cost for the 100-year project life is due to a larger siltation reservation requirement and the corresponding increase in the height of dam. This also increases the lands required in the reservoir area as well as the cost of the appurtenances.

3. BENEFIT-COST RATIOS

Benefits from construction of the proposed reservoir on San Francisquito Creek would result from (1) flood control by the reduction of both inundation and bank erosion damages; (2) water conservation by providing additional water supplementing existing supplies for urban use.

SUMMARY OF BENEFITS AND COST

	Project Life 50 years	 100 years
Average Annual Benefits	$ 581,500	$ 581,500
Average Annual Cost	377,000	346,000
Benefit-Cost Ratio	1.5	1.7

4. INTANGIBLE PROJECT EFFECTS

Intangible damages from floods in the San Francisquito Creek basin are not appreciable. No deaths have been reported due to past floods although considerable anxiety is felt during flood flows in the area because of the unprotected banks along the creek. Isolation of the area is improbable since there are numerous re-route highways providing ingress and egress to the flood area. Under project conditions the intangible damages would be essentially eliminated due to the high degree of protection achieved by the proposed project.

5. PHYSICAL FEASIBILITY AND COST OF PROVIDING FOR FUTURE NEEDS

The project as proposed in the report does not provide for satisfaction of anticipated future water requirements. Studies of water requirements of the area as presented in the report and appendices indicate that the potential reservoir capacity of the basin is not sufficient to provide for the future needs that could reasonably be anticipated to develop during the useful life of the project. From studies of water requirements for the city of Palo Alto (Appendix D) it has been determined that by year 1980 Palo Alto will require in addition to its

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fully utilized local well supply six to seven thousand acre-feet of potable water and by year 2020 17 to 21 thousand acre-feet. Palo Alto presently is purchasing supplemental water from the San Francisco Water Department's Hetch Hetchy pipeline in an amount of about 3,000 acre-feet per year. Officials of San Francisco estimate that the quantity of water available from the Hetch Hetchy system will be in excess of Palo Alto's future demands. The present average cost to Palo Alto for Hetch Hetchy water is about $70 per acre-foot. Studies of providing water by single-purpose conservation reservoirs in the basin for use revealed that its cost would be in excess of $125 per acre-foot or about twice as much as by using the Hetch Hetchy source. This is discussed in Appendix C under alternate reservoir studies.

6. ALLOCATION OF COSTS

The method of cost allocation used in the report was the "Use of Facilities" method (prorate storage). In the case of flood control and water supply only, the Use of Facilities method provides a more equitable distribution of cost.

a. Use of facilities method. Allocations for both 50-year life and 100-year life are as follows:

ALLOCATION OF COST
SAN FRANCISQUITO CREEK MULTIPLE-PURPOSE RESERVOIR

For Senate Resolution 148. 50 and 100-year life -
12,600 and 13,200 acre-feet respectively

Item No.		50-year Life Project Features			100-year life Project Features		
		Flood Control	W. C.	Total	Flood Control	W. C.	Total
1	Separable annual cost	$297,500	$67,000	$364,500	$266,500	$67,000	$333,500
2	Remaining cost to be distributed	0	0	12,500	0	0	12,500
3	Ratio of distribution	0.71	0.29	1.00	0.71	0.29	1.00
4	Distribution	8,500	4,000	12,500	8,500	4,000	12,500
5	Total allocation (annual charge)	$306,000	$71,000	$377,000	$275,000	$71,000	$346,000
6	Benefits	$502,000	$79,500	$581,500	$502,000	$79,500	$581,500
7	Benefit-cost ratio	1.6	1.1	1.5	1.8	1.1	1.7
8	Percent of cost to be allocated	81	19	100	81	19	100
9	Effective storage (acre-feet)	8,500	3,500	12,000	8,500	3,500	12,000
10	Percent of storage to be allocated	71	29	100	71	29	100
11	Preauthorization surveys	$ 2,000	$ 1,000	$ 3,000	$ 2,000	$ 1,000	$ 3,000
12	Total annual charges	$308,000	$72,000	$380,000	$277,000	$72,000	$349,000
13	Total project cost (including $76,000 preauthorization Surveys)			$7,830,000			$8,276,000

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b. Priority of use method. Allocations for both 50-year life and 100 year life are as follows:

"PRIORITY OF USE METHOD"

Item No.		50-year life Project Features			100-year life Project Features		
		Flood Control	W. C.	Total	Flood Control	W. C.	Total
1	Justifiable expenditure (benefits or least alternate cost)	$310,000	$79,500	$389,500	$279,000	$79,500	$358,500
2	Specific Cost	0	0	0	0	0	0
3	Allocation of Joint cost	$310,000	$67,000	$377,000	$279,000	$67,000	$346,000
4	Final allocation	$310,000	$67,000	$377,000	$279,000	$67,000	$346,000

c. Incremental cost method. Allocations for both 50-year life and 100-year life are as follows:

"INCREMENTAL COST METHOD"

Item No.		50-year life Project Features			100-year life Project Features		
		Flood Control	W. C.	Total	Flood Control	W. C.	Total
1	Justifiable expenditure (benefits or least alternate cost)	$310,000	$79,500	$389,500	$279,000	$79,500	$358,500
2	Separable cost	297,500	67,000	364,500	266,500	67,000	333,500
3	Remaining cost to be allocated	12,500	0	12,500	12,500	0	12,500
4	Total allocation	$310,000	$67,000	$377,000	$279,000	$67,000	$346,000

7. EXTENT OF INTEREST IN PROJECT

In connection with the proposed project, local interests would financially participate in the project to the extent of: (1) that they would furnish all lands, easements, rights-of-way, relocate roads, utilities and other structures; (2) repay all cost allocated to the water conservation feature in accordance with the Water Supply Act of 1958; and (3) operate and maintain the completed works in accordance with regulations prescribed by the Secretary of the Army. Details of the estimate of costs are contained in the report and Appendix C. The assurances of local cooperation are conditional upon the passage of legislation by the State of California to authorize reimbursement of cost for lands, easements, and rights-of-way allocated to flood control.

8. REPAYMENT SCHEDULE

Local interests would be required to pay for all lands, easements, rights-of-way and relocations allocated to flood control as prescribed in flood control acts for local protection works and repay that part of the project cost allocated to water conservation in accordance with the Water Supply Act of 1958. This would permit a part of the lands, and relocation costs to be financed initially by the Federal Government. Based on the foregoing, local interests would: (1) be required to contribute in cash prior to the start of construction of the project funds equivalent to that portion of the cost of lands, easements, rights-of-way and relocations allocated to flood control, being 83.4 percent of the total cost of those items and estimated to be $2,354,000; (2) repay to the United States

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Treasury 16.6 percent of the total project cost estimated to be $1,288,000, plus interest during construction, in not more than 50 installments with interest at the rate established by the Secretary of the Treasury in consideration of the water conservation benefits. Federal appropriations required for construction of the project are $5,400,000 derived as follows:

Federal cost:

Total project cost (excluding preauthorization surveys)	$ 7,754,000
Less non-Federal cash contribution	2,354,000
Required Federal appropriation	$ 5,400,000

9. EFFECT OF PROJECT ON STATE AND LOCAL GOVERNMENTS

It is believed that the proposed project will have no appreciable adverse effects on the State and local governments based on the benefits allocated to the proposed project.

10. INFORMATION ON ALTERNATIVE PROJECTS

In addition to the recommended project for authorization, information on alternative projects is as follows:

a. Project description and economic life. The alternative projects considered physically feasible and of sufficient overall merit to warrant consideration in the final project formulation process affording similar tangible benefits are:

(1) Channel works consisting of a concrete-lined channel in the upper reaches in combination with levees in the lower reach.

(2) A single-purpose reservoir providing 8,500 acre-feet of flood control and 600 acre-feet of silt storage.

(3) A single-purpose water conservation reservoir providing 3,500 acre-feet of conservation storage and 600 acre-feet of silt storage.

(4) A combination of channel works and reservoir. A 50-year economic project life was used as the basis for economic analysis of the alternative project studies contained in the report.

b. Project cost. The estimates of alternative project costs and their benefit-cost ratio as contained in Appendix C to the report are summarized in the following tabulation:

SUMMARY OF COSTS AND BENEFIT-COST RATIO

Description	First Cost	Annual Cost	Benefit-Cost Ratio
Channel works	$ 12,000,000	$ 610,000	0.6 to 1.0
Single-purpose flood control reservoir (9,100 acre-feet)	6,546,000	310,000	1.6 to 1.0
Single-purpose water conservation reservoir (4,100 acre-feet)	4,000,000	218,000	0.4 to 1.0
Combination			
5,000 c.f.s. channel and 5,600 acre-feet reservoir	9,000,000	400,000	0.8 to 1.0

All estimates include allowances for contingencies, engineering and supervision and administration. The estimates of annual cost include interest and amortization at the rate of 2-5/8 percent for Federal cost and 4 percent for non-Federal cost, maintenance, operation and replacements.

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c. Discussion of alternative projects. The most feasible plan of channel works was found to be a concrete-lined channel in the upper reaches in combination with levees in the lower reach through the marsh and overflow land near the bay. Since these works are economically not justified, they were rejected in favor of the recommended project.

Channel improvements by widening and deepening the channel or providing protection by levees were not practical because of excessive rights-of-way requirements. In addition such channel or levee works would be more costly than the above mentioned channel works.

Although the benefit-cost ratio for the 9,100 acre-foot single-purpose flood control reservoir is greater than unity, a multiple-purpose reservoir for flood control and water conservation was studied because local interests had expressed a desire to retain flood flows by surface storage. The multiple-purpose reservoir was found to be more desirable overall, and made greater use of the reservoir site. Therefore, the single-purpose reservoir for flood control was rejected in favor of the recommended project.

In conjunction with the various reservoir studies, the least expensive alternate for any one purpose which would serve that purpose equally as well as the recommended project was determined. From these studies it was found that the Hetch Hetchy water system, owned by the city and county of San Francisco, presently furnishes water to the city of Palo Alto for urban and industrial use at the least alternate cost.

In addition to the fact that the benefit-cost ratio for a combined channel and reservoir project is slightly less than unity, this project would be less desirable than a single-purpose flood control reservoir.

interference with existing developments and facilities and destruction of the aesthetic value of the creek. Also, this type of project does not provide water conservation features. Therefore, the combined channel and reservoir project was rejected in favor of the recommended project.

d. Allocation of cost. Due to the fact that the alternative projects studied were not economically feasible, or were excluded from further consideration for reasons given above, cost allocations and repayment schedules were not derived.

e. Effects of projects on State and local governments. It is believed that the alternative projects studied, i.e., single-purpose flood control reservoir, channel works, and/or combinations of both would meet with less local favor than the recommended project for the following reasons:

(1) A single-purpose flood control reservoir would interfere with the aesthetic development and would not provide the supplemental water conservation feature, or add to the aquatic recreational potential in the area.

(2) Channel works interfere extensively with existing developments and facilities and would reduce the aesthetic value of the creek.

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